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### Pneumococcal bacteraemia in mother and son

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**Case 2**—The 32 year old son presented with a history of severe dyspnoea and pleuritic chest pain on the right. Since his mother's admission four days

previously he had felt generally unwell and had experienced rigors the day before admission. He had a history of asthma but was not taking regular medication and had never been given corticosteroids. He was feverish (38.6°C) and the radiograph showed a dense area of consolidation in the right upper lobe. Sputum and blood were obtained for culture and treatment begun with benzylpenicillin. The fever resolved within 24 hours of starting treatment and he recovered uneventfully. *S pneumoniae* capsular type 1 was isolated from the blood culture after overnight incubation. Sputum culture yielded mouth commensals only.

### Comment

We suggest that a good prospective study of pneumococcal pneumonia is needed to establish whether transmission is common, especially where contacts have a history of underlying lung disease or other predisposing factors.<sup>5</sup> The high mortality from this condition should not be forgotten and the importance of obtaining blood cultures as well as sputum culture from patients with a clinical diagnosis of pneumonia cannot be overemphasised.

We thank Dr P Howard and Dr J D Ward for permission to report their cases, and Mr R Howden for typing the pneumococcal isolates.

- <sup>1</sup> MacLeod CM, Hodges RG, Heidelberger M, Bernhard WG. Prevention of pneumococcal pneumonia by immunisation with specific capsular polysaccharides. *J Exp Med* 1945;**82**:445-65.
- <sup>2</sup> Austrian R. Prevention of pneumococcal infection by immunization with capsular polysaccharides of streptococcus pneumoniae: current status of polyvalent vaccines. *J Infect Dis* 1977;**136**, suppl:838-42.
- <sup>3</sup> Austrian R, Bennett IL. Pneumococcal infections. In: *Harrison's principles of internal medicine*. New York: McGraw-Hill Book Co, 1974:766-72.
- <sup>4</sup> Austrian R. Pneumococcal infection and pneumococcal vaccine. *N Engl J Med* 1977;**297**:938-9.
- <sup>5</sup> Gopal V, Bisno AL. Fulminant pneumococcal infections in "normal" asplenic hosts. *Arch Intern Med* 1977;**137**:1526-30.

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## Relative palatability of liquid enteral feeds for general hospital patients: simple method of assessment

Many hospital patients need oral supplements to improve their daily intake of nutrients. Successful use of such supplements requires them to be sufficiently acceptable for reasonable volumes to be consumed regularly. Although manufacturers make claims for the palatability of their products, this subject has received little scientific attention, although some studies have been conducted specifically on patients with cancer.<sup>1</sup>

Palatability of food supplements (figures are numbers of responses)

Product	Liked definitely		Liked mildly		Neither liked nor disliked		Disliked mildly		Disliked definitely	
	Controls	Patients	Controls	Patients	Controls	Patients	Controls	Patients	Controls	Patients
Build Up	13	24	14	15	7	3	6	—	8	5
Clinifeed	6	5	13	21	8	8	13	3	8	10
Complan	3	9	6	11	14	10	14	4	11	13
Ensure	10	20	10	7	3	4	12	8	13	8
Isocal	0	10	2	4	6	5	12	5	28	23
Nutrauxil	6	14	11	12	7	7	12	7	12	7

Ranking when subjects were asked which product they liked best:

Controls: Build Up > Ensure > Clinifeed > Nutrauxil > Complan > Isocal (Build Up v Clinifeed  $p \leq 0.05$ , Nutrauxil v Isocal  $p \leq 0.001$ , all others NS).  
Patients: Build Up > Ensure > Nutrauxil, Clinifeed > Complan > Isocal (Build Up v Ensure  $p \leq 0.01$ , Nutrauxil and Clinifeed v Isocal  $p \leq 0.05$ , all others NS).

Ranking when subjects were asked to avoid those products they most disliked:

Controls: Clinifeed > Build Up > Nutrauxil > Complan > Ensure > Isocal (Ensure v Isocal  $p \leq 0.001$ , all others NS).  
Patients: Build Up > Nutrauxil > Ensure > Clinifeed > Complan > Isocal (Build Up v Complan  $p \leq 0.05$ , Complan v Isocal  $p \leq 0.01$ ).

### Subjects, methods, and results

We undertook this study to compare the acceptability of six commercially available products widely used in hospitals in the United Kingdom and comparable in composition. The products chosen were Build Up (Carnation Foods), Clinifeed 400 (Roussel Laboratories), Complan (Farley Health Products), Ensure (Abbott Laboratories), Isocal (Mead Johnson), and Nutrauxil (Kabi Vitrum). The vanilla flavour of each product was used, Complan being flavoured with vanilla essence.

A randomised double blind taste testing technique was used. Subjects were offered in random order 10 ml samples of each product in identical containers labelled with random double digits. They were asked to rate the palatability of each product on a five point scale ranging from "like definitely" to "dislike definitely." Between tastings the palate was cleared with water and a plain water biscuit. The study comprised 47 patients (24 women and 23 men, mean age 55.6 years) from general surgical wards, all eating a normal hospital diet, and 48 controls (24 women and 24 men, mean age 32.5 years). The table shows the results, which were ranked and analysed using the  $\chi^2$  test. Admission to hospital appeared to influence assessment of palatability since hospital patients registered fewer overall "dislike" responses (33% v 52%) and more "like" responses (54% v 33%) than controls ( $p \leq 0.05$ ).

A reproducibility study was undertaken on a separate group of 15 patients (five women and 10 men, mean age 57.2 years) to check the reliability of the method, the patients performing the test on two occasions one week apart. The results were analysed with Spearman's rank correlation and confirmed reproducibility, particularly for three of the products—namely, Build Up, Ensure, and Isocal.

### Comment

The differences between patient and control responses may be accounted for by an anxiety to please or more acceptance of unusual substances by hospital patients, although certain diseases such as cancer change taste perception.<sup>1-3</sup> Despite these differences Build Up was clearly the product most acceptable to patients and controls, and should, therefore, be the supplement of choice. This preference may have been due to its more natural taste as it is reconstituted with fresh milk. The cost per gram nitrogen is considerably lower than that of other products tested except Complan. A practical drawback to its use is the extra time taken in preparation. Build Up has a fairly low ratio of energy to nitrogen, which could be increased by adding an energy source such as Caloreen. As Isocal was consistently the least acceptable product we recommend that it is not used as an oral supplement despite being comparable in price and composition. As the four other products are all similar in composition and acceptability we suggest that the cheapest is used.

The method used in this study is simple to perform and, under the controlled conditions described would be a useful test for assessing other products.

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